

**CHILD HEALTH IN PAKISTAN: AN ANALYSIS OF PROBLEM
STRUCTURING**

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by

Samina T. Panwhar

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CHILD HEALTH IN PAKISTAN: AN ANALYSIS OF PROBLEM STRUCTURING

Approved by:

Dr. Susan E. Cozzens, Advisor
School of Public Policy
Georgia Institute of Technology

Dr. Marilyn A. Brown
School of Public Policy
Georgia Institute of Technology

Dr. Barbara D. Lynch
The Sam Nunn School of International Affairs
Georgia Institute of Technology

Date Approved: August 25, 2009

To Fayaz and Sachal
Two dearest persons in my life

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
SUMMARY	x
<u>CHAPTER</u>	
1 INTRODUCTION	1
1.1 Methods Summary	6
2 BACKGROUND	8
2.1 Child Mortality	8
2.2 Child Mortality in Pakistan and Bangladesh	9
2.3 Pakistan: An Overview	12
2.4 Bangladesh: An Overview	13
2.5 Pakistan's Health Profile	14
2.6 Bangladesh's Health Profile	15
3 LITERATURE REVIEW	17
3.1 Public Health: A Historical Prospective	17
3.2 Pakistan's Health and Child Mortality Outcomes	20
3.3 Health and Child Mortality in Local Context	21
4 METHODOLOGY	25
4.1 Data Collection	27
4.2 Data Analysis	28
4.3 Research Model	29

4.3.1 Construction of Adequacy Measure	30
4.3.1.1 Healthcare	30
4.3.1.2 Nutrition	31
4.3.1.3 Environmental Factors	31
4.3.1.4 Education and Awareness	32
4.3.1.5 Structural Factors	32
4.3.1.6 Social and Other Factors	33
5 RESULTS AND DISCUSSION	34
5.1 Problem Structuring Differentials	35
5.1.1 A Comparison of Pakistan and Bangladesh	35
5.1.1.1 Healthcare	36
5.1.1.2 Nutrition	36
5.1.1.3 Environmental Factors	37
5.1.1.4 Education and Awareness	38
5.1.1.5 Structural Factors	38
5.1.1.6 Social and Other Factors	38
5.1.2 A Comparison of Pakistan and Bangladesh with Literature Review	39
5.1.2.1 Healthcare	40
5.1.2.2 Nutrition	41
5.1.2.3 Environmental Factors	41
5.1.2.4 Education and Awareness	42
5.1.2.5 Structural Factors	43
5.1.2.6 Social and Other Factors	43
6 CONCLUSIONS AND POLICY IMPLICATIONS	44
6.1 Further Research Recommendations	46

APPENDIX A: Millennium Development Goals and Targets	48
APPENDIX B: Problem Structuring Coding: Policy Documents	49
APPENDIX C: Problem Structuring Coding: Literature Review	50
REFERENCES	51

LIST OF TABLES

	Page
Table 1: Health Statistics for World Regions	2
Table 2: A Comparison of Health Indicators of Pakistan and Bangladesh	4
Table 3: Health and Related Expenditure for South Asia	15
Table 4: Data Summary	28

LIST OF FIGURES

	Page
Figure 1: Historical Trend Showing Income versus Infant Mortality	3
Figure 2: Priority of Problem Structuring in Policy Analysis Process	5
Figure 3: Highest Annual Deaths in Children Under-five	10
Figure 4: Causes of Mortality in Children Under-five in Pakistan	11
Figure 5: Causes of Mortality in Children Under-five in Bangladesh	12
Figure 6: Problem Structuring: Pakistan vs. Bangladesh	35
Figure 7: Policy Formulation Differentials between Pakistan and Literature Review	40

SUMMARY

This study presents an analysis of policies addressing child mortality in Pakistan focusing on problem structuring, using a comparison with Bangladesh. Pakistan's progress in addressing child mortality rate has been much slower than that of Bangladesh despite the fact that Pakistan has excelled in economic growth, and the two countries have comparable populations and share political history. This study analyzes and provides an explanation for differential outcomes in terms of problem structuring in the two countries.

A comparative analysis of policy documents reviewed for the two countries illustrates the fact that Bangladesh, in formulating its child health policy, has emphasized the input factors such as nutrition and environmental aspects, besides health services. Pakistan, on the other hand, maintains a general problem formulation strategy focusing mainly on health service and ignoring the social, environmental, and other factors causing morbidity and mortality in children. Another comparison between policy formulation in each country and the extensive literature available on child mortality suggest that neither country pays as much attention to structural factors as the literature does.

The analysis provides some insight into differentials in policy formulation associated with child mortality in the two countries, but more importantly, it provides an understanding of the underlying elements for inadequate policy outcomes in case of Pakistan.

CHAPTER 1

INTRODUCTION

Health care in many countries in the Global South is generally perceived as a functioning health care provision to meet the needs of those requiring medical care, and yet the majority of health issues prevalent in developing countries do not solely arise from the lack of access to medical services such as hospitals and doctors but also from the deprivation of basic needs such as proper nutrition, safe water and sanitation, education, clean environment, and so on (Claeson 2004). Several studies done to analyze the causes of child mortality have concluded that underweight status and micronutrient deficiency are the major underlying factors causing infectious diseases by affecting the immune system, which in turn lead to mortality in children (Robert E. Black 2003). Low birth weight, mainly caused by preterm birth or intrauterine growth restriction, is associated with 60 to 80% of neonatal deaths globally (UNICEF 2008). Furthermore, environmental factors contribute to a number of health risks in children worldwide. Globally, acute respiratory infections, diarrheal diseases, and malaria in children under the age of five are attributed to environmental hazards (WHO 2009).

Child mortality is concentrated in specific parts of the world where general incidences of morbidity and mortality remain high (Claeson 2004). Sub-Saharan Africa and South Asia have remain the lowest performance regions in improving child health indicators (UNICEF 2008). For instance, the highest number of deaths in under-five children occurs in South Asia, next to Sub-Saharan Africa (Table 1). In neonatal mortality rate, South Asia is in par with Sub-Saharan Africa with 41 deaths per 1,000 live births annually (Table 1). Additionally, numerous underlying factors, which are correlated with child mortality in developing countries, have remained deficient in South Asia. For instance, almost half the world's 140 million underweight children under the

age of five live in South Asia (Claeson 2004). Low birth-weight leading to neonatal mortality is often associated with poor nutritional and health status of mothers before and during pregnancy, and is a common nutritional indicator in South Asia (UNICEF 2008). Evidence of gender discrimination in nutrition is also clear in South Asia among children under five and adolescence (UNICEF 2008).

Table 1: Health Statistics for World Regions (UNICEF 2008)

World regions	Under-5 mortality rate		Infant mortality rate (under 1)		Neonatal mortality rate	Total population (thousands)	Annual no. of births (thousands)	Annual no. of under-5 deaths (thousands)
	1990	2007	1990	2007	2004	2007	2007	2007
Sub-Saharan Africa	186	148	109	89	41	767,218	30,323	4,480
Middle East and North Africa	79	46	58	36	25	389,176	9,726	445
South Asia	125	78	89	59	41	1,567,187	37,986	2,985
East Asia and Pacific	56	27	42	22	18	1,984,273	29,773	799
Latin America and Caribbean	55	26	44	22	13	566,646	11,381	302
Central and Eastern Europe, Commonwealth of Independent States	53	25	44	22	16	405,992	5,560	138
Industrialized countries	10	6	8	5	3	974,913	11,021	66

Within the South Asian region, disparity in child mortality is pronounced. With the best health outcomes, Sri Lanka has an under five mortality rate of 21 (per 1,000 live births) compared to the worst outcome in Pakistan with a rate of 90 (per 1,000 live births) reported in 2007. Even within countries with similar economic growth in terms of GDP the child mortality indicators vary greatly. For instance, Pakistan's infant mortality rate (IMR) was reported at a staggering level of 78 (per 1,000 live births) compared to 52 for Bangladesh in 2006. This difference in IMR levels is magnified if we compare the economic growth in the two countries: Gross Domestic Product (GDP) per capita (PPP US\$) in 2005 was recorded as \$2,370 for Pakistan and \$2,053 for Bangladesh. IMR

declined by 21 percent in Pakistan between 1990 and 2005 compared to Bangladesh where the reduction was more than double- 46 percent (GoP 2009).

The differentials in health outcomes in the two countries despite sharing similar economic, regional, and historical elements are worth exploring. Hans Rosling (Rosling 2009) with the support of historical trends in child mortality and economic growth demonstrates how the two countries take different trajectories while starting from a common point, i.e., before the independence of Bangladesh in 1971 (Figure 1). The GDP of Pakistan grew at a faster pace than Bangladesh, while the decline in infant mortality rates was significantly higher in case of Bangladesh (Rosling 2009). A comparison of the baseline health indicators of 1990 used for the United Nations' Millennium Development Goals (MDGs) show the differing pace of progress of the two countries in child mortality related goals (Table 2).

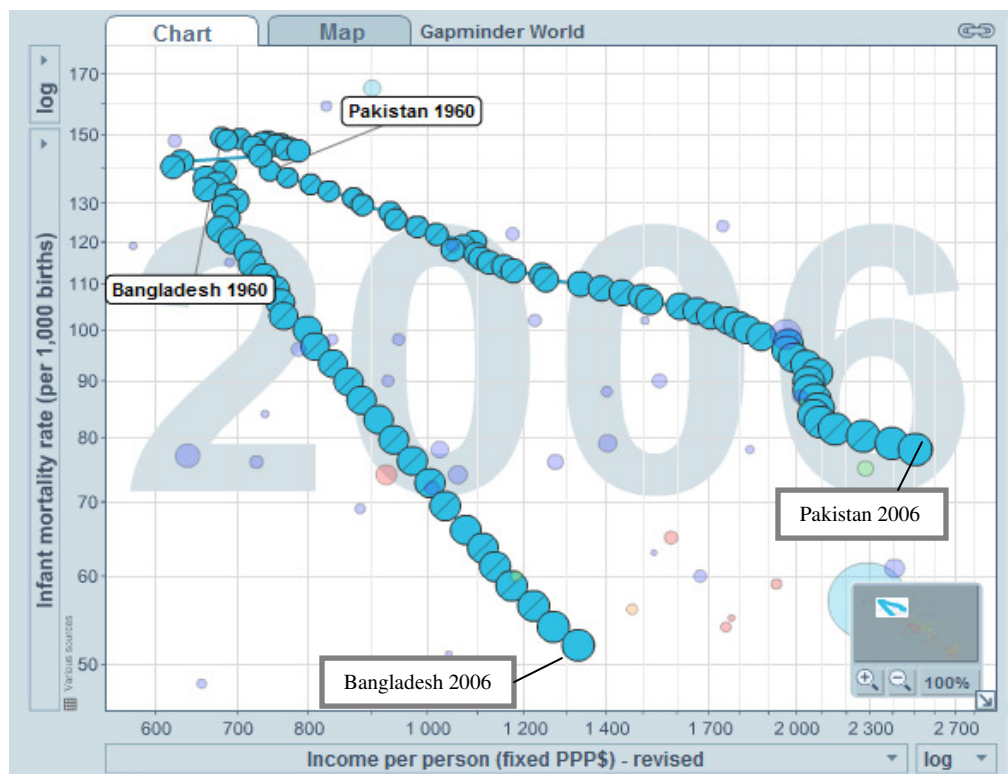


Figure 1: Historical Trend Showing Income versus Infant Mortality (Rosling 2009)

Table 2: A Comparison of Health Indicators of Pakistan and Bangladesh (UNICEF 2009a; UNICEF 2009b)

Indicator	Pakistan	Bangladesh
Under-5 mortality rank	43	58
Under-5 mortality rate, 1990	132	151
Under-5 mortality rate, 2007	90	61
Infant mortality rate (under 1), 1990	102	105
Infant mortality rate (under 1), 2007	73	47
Neonatal mortality rate, 2004	53	36
Total population (thousands), 2007	163902	158665
Annual number of births (thousands), 2007	4446	3998
Annual number of under-5 deaths (thousands), 2007	400	244
GNI per capita (US\$), 2007	870	470
Life expectancy at birth (years), 2007	65	64
Total adult literacy rate (%), 2000-2007	55	54
% share of household income 1995-2005, lowest 40%	22	21
% share of household income 1995-2005, highest 20%	41	43

This study provides a partial explanation for the differences in child mortality outcomes in terms of differences in problem formulation in the two countries.

Policy structuring or policy formulation is considered as the most important phase in policy analysis (Figure 2) (Dunn 2007). Identifying the right policy problems and associated causes of those problems are a critical component which leads to achieving intended outcomes. In the absence of proper formulation of a policy problem, the efforts and strategies often lead to inadequate outcomes, and policy makers run the risk of committing errors of the third type: solving the wrong problem (Betz 1972).

Figure 2 shows that the problem structuring phase takes priority over the problem solving phase. In the policy analysis process, problem structuring methods are considered higher-order methods that have to be dealt with first before approaching the lower-order

methods, i.e., problem solving. This is where the policy analysts can prevent themselves from committing errors of the third kind.

Policy problems are best described as ‘messes’ or systems of external conditions responsible for creating dissatisfaction among different segments of the society (Ackoff 1974). Owing to this interdependence of systems of problems a holistic approach is generally required that tackles these problems as inseparable entities (Mitroff 1973). However, the challenge of formulating these multi-faceted problems is enormous, and is recognized by those involved in this process. To simplify this process policy models are used to represent problem situations (Martin Greenberger 1976).

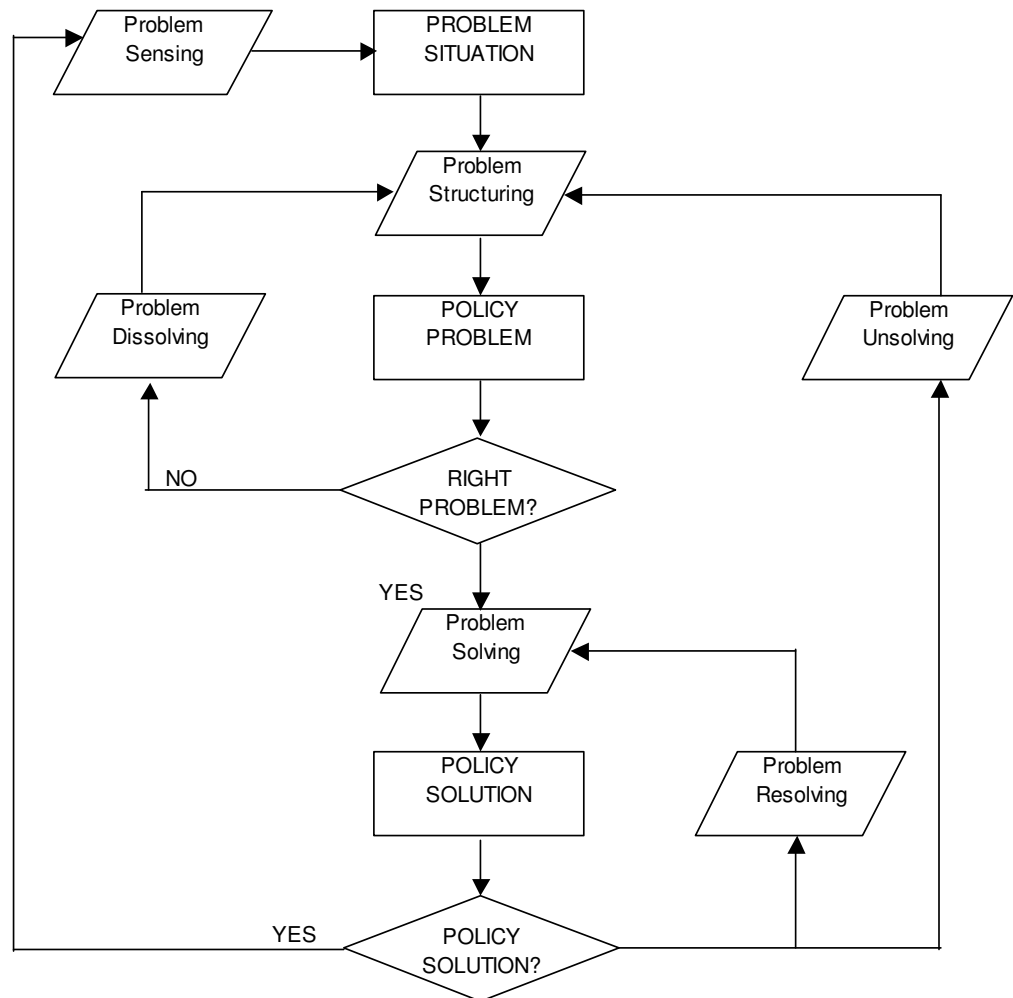


Figure 2: Priority of Problem Structuring in Policy Analysis Process (Dunn 2007)

The two approaches generally used to structuring the policy problems include ‘political stream’ and ‘policy stream’ (Vesely 2007). The analysts dealing with the political stream analyze problem situations retrospectively, and try to analyze how the problem has been socially constructed and formulated by different actors. The goal of policy stream is to transform a public issue into a concrete problem completing the problem formulation phase of policy process (Vesely 2007).

1.1 Methods Summary

Using Dunn’s framework of problem structuring I conducted two separate analyses: 1) a comparative analysis of the policy structuring in Pakistan and Bangladesh using policy documents for the two countries and 2) a separate comparative analysis of policy structuring of each country with the literature available on child mortality. The first part of the analysis illustrates the differences in problem structuring approaches in the two countries and whether local context is reflected in the problem formulation that may be contributing to the differential health outcomes. The second part explores whether the extensive research available in child mortality conducted by the local and international researchers is reflected in the policy formulations in either country.

The literature on policy problem formulation suggests that inadequate formulation will fail to produce the intended outcomes. Problem formulations are inadequate if they do not include all the factors that the full set of stakeholders considers important. As a proxy for stakeholder consultation, this study uses analysis of key policy documents. Inadequate problem formulation is a shortfall in complexity between the problem formulation in the documents and, on the one hand, the background information and health statistics on the country and on the other hand, the published literature on child mortality.

Two hypotheses proposed in this study are:

1. that Pakistan's outcomes are worse than Bangladesh's in part because of lack of alignment between the official problem formulation and factors known to be important locally;
2. that Pakistan's outcomes are also weakened by lack of attention to some factors identified as important in the research literature.

Full methods details are provide in Chapter Four.

This document is organized into six parts. The 'Introduction', provided above, presents an overview of the research subject, i.e., child mortality in general and in the context of Pakistan and Bangladesh, rationale for this research focus, theoretical background, a brief description of the methodology used for the analyses, and hypotheses proposed to be tested using the analyses. The second chapter 'Background' comprises a general overview of the research subject and statistical evidence of the problem being explored. It also provides an overview of the contextual factors such as geography, culture, demographics, health profile, etc of the two countries. The third chapter 'Literature review' consists of a detailed discussion of the historical endeavors in addressing the public health issues associated with child mortality. Additionally, it provides a summary of the research that has been conducted in the subject area and evidence and conclusions that have been drawn from that research. This chapter also provides a discussion on the health and child mortality in the local context of Pakistan and Bangladesh. This follows by the chapter 'Research Methodology' focused on a description of the research framework, analytical methods, a conceptual model, data sources, and data analysis. The fifth chapter 'Results and Conclusions' provides a detailed discussion of the analysis outcomes, and the sixth and last chapter is 'Conclusions and Policy Implications' with further research recommendations.

CHAPTER 2

BACKGROUND

2.1 Child Mortality

Reducing child mortality- the millennium development goal # 4 (MDG 4) - has remained an immense challenge in many developing countries. Over 10 million children born alive worldwide die before their fifth birthday, of whom 4 million die during the first four weeks of their lives (neonatal period) (UNICEF 2008). Additionally, an estimated 4 million still-births occur annually worldwide with the vast majority occurring in developing countries (Semba 2008). Pneumonia, diarrhea, and neonatal causes (birth asphyxia, low birthweight, and disorders arising in the perinatal period) continue to be the major causes responsible for the child mortality with the exception of sub-Saharan Africa where malaria and AIDS also contribute greatly to child deaths (Black R. 2003).

The causes of most deaths are a disease or a combination of diseases that could be easily treated or prevented. For instance, the use of antibiotics for pneumonia or a simple mix of salts and sugars for diarrhea can prevent the majority of deaths. Furthermore, environmental, nutritional, educational, and social factors contribute significantly to morbidity and mortality in children. Malnutrition alone contributes to over a third of these deaths (UN 2008b).

In most developing countries with poor child health status, a number of underlying factors that lead to apparent causes of mortality are often neglected in establishing the causes of child mortality, and consequently get eliminated in the policy making process (Black R. 2003). For instance, underweight status of children and micronutrient deficiencies result in immune and non-immune host defenses, which ultimately lead to terminal causes of deaths in children (Black R. 2003). However,

problem formulation often translates into policy and programs that focus on the apparent causes of morbidity and mortality rather than addressing the underlying causes, in most cases.

2.2 Child Mortality in Pakistan and Bangladesh

Although child mortality rates declined significantly in 1980s globally, some regions are still lagging behind (Black R. 2003). Despite a 50% decline in South Asia in 1980s almost one in ten children still dies before her or his fifth birthday (Ahmed OB 2000), and almost half the world's underweight children- 65 million – live in South Asia. And within regions there are significant variations. For instance, under-five child mortality was reported as 21 per 1,000 births for Sri Lanka in 2007 compared to 90 for Pakistan (UNICEF 2008). Even countries with similar economic growth show varying progress in child mortality. Pakistan's IMR was reported at a staggering level of 78 (per 1,000 live births) compared to 52 for Bangladesh in 2006. This difference in IMRs is magnified if we compare the economic growth in the two countries: Gross Domestic Product (GDP) per capita (PPP US\$) in 2005 was recorded as \$2,370 for Pakistan and \$2,053 for Bangladesh. Pakistan's child mortality ranks worst in the South Asian region with an estimated 400,000 infant deaths occurring annually (Bhutta Z. A. 2004). Putting that in a global perspective, Pakistan is one of the six countries that account for over 50% of the child mortality worldwide (Figure 3).

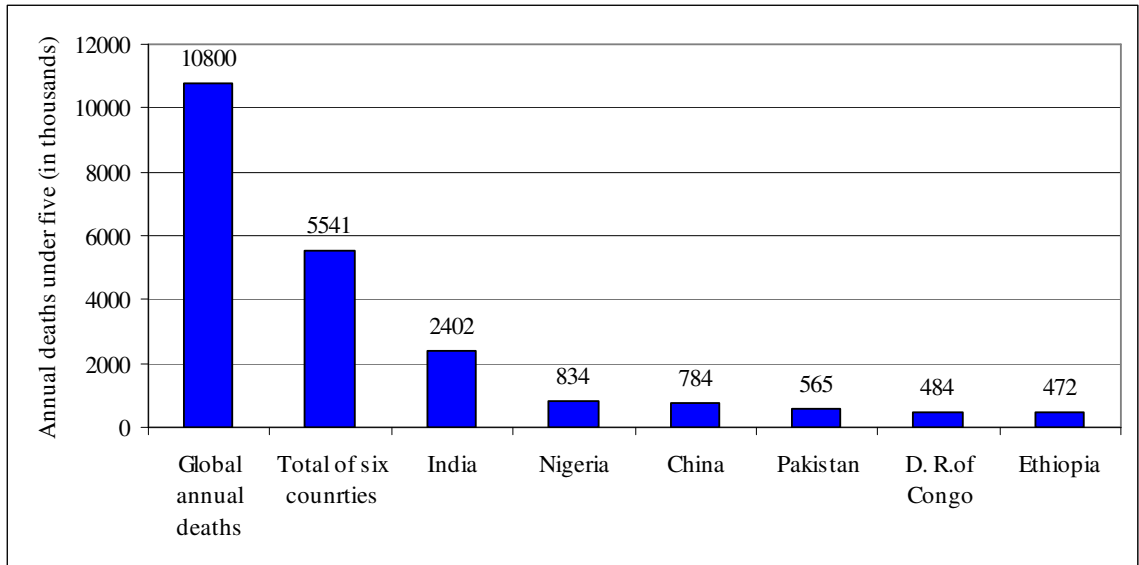


Figure 3: Highest Annual Deaths in Children Under-five (Lynn P. Freedman 2005)

The factors contributing to child mortality vary from country to country, even within countries, based on the local context such as ecology, socioeconomic factors, demographics, culture, religion, and so on (Black R. 2003). As reported in the Demographic and Health Survey of Pakistan, child mortality outcomes in Pakistan vary greatly between four provinces, urban and rural areas, socioeconomic groups, and so on (NIPS 2008). For instance, under-five child mortality was reported as 55 (per 1,000 births) in the households in which mothers had attained secondary level education compared to 102 in the households in which mothers had no education (NIPS 2008). Similarly, Bangladesh shows significant child mortality variations between different socioeconomic groups and administrative divisions (NIPORT 2009).

Despite the differentials in health outcomes the distribution of the causes of mortality in children under-five in the two countries are quite similar with some minor variations in the proportion of each cause (Figures 4 and 5). 56 percent of deaths are associated with neonatal causes in case of Pakistan compared to 45 percent in Bangladesh. The percentage of deaths caused by diarrheal diseases, however, is greater for Bangladesh, 20% of the total, compared to 14% for Pakistan. The shares of

pneumonia, measles, malaria, and injuries are comparable in the two countries. Looking at the neonatal causes in the two countries, there appears to be one significant difference. Neonatal tetanus contributes 13% to neonatal deaths in Pakistan compared to only 4% in Bangladesh, and this appears to be the driving factor for the overall higher neonatal mortality in Pakistan.

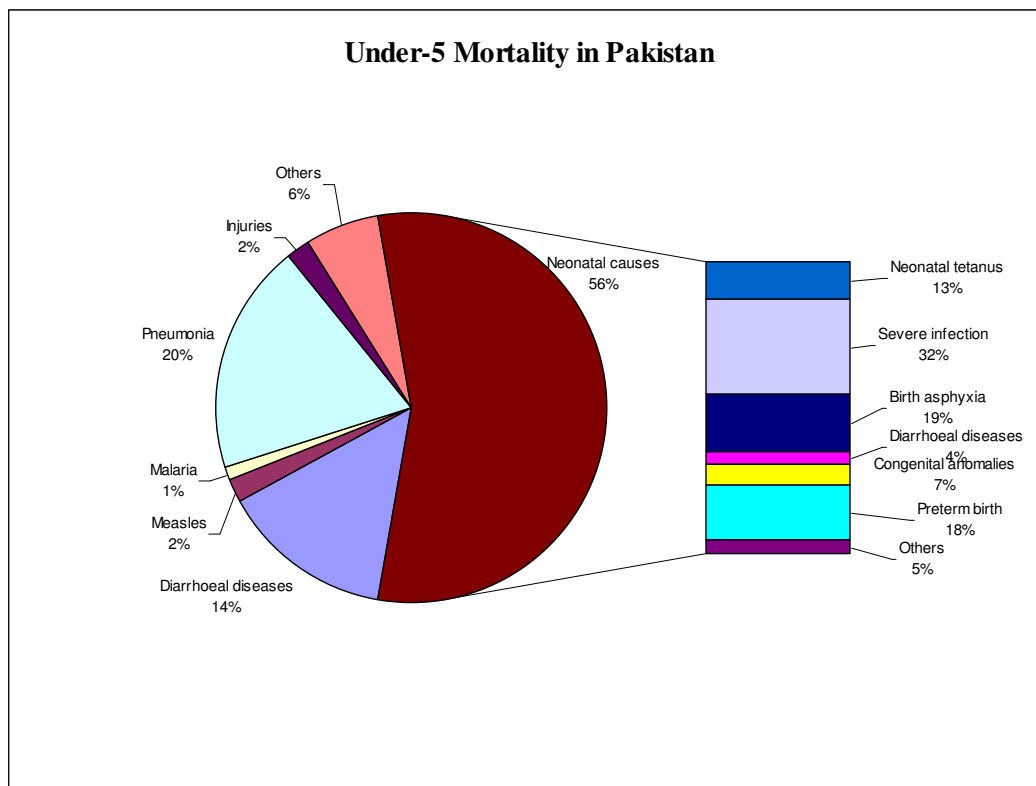


Figure 4: Causes of Mortality in Children Under-five in Pakistan (WHO 2006c)

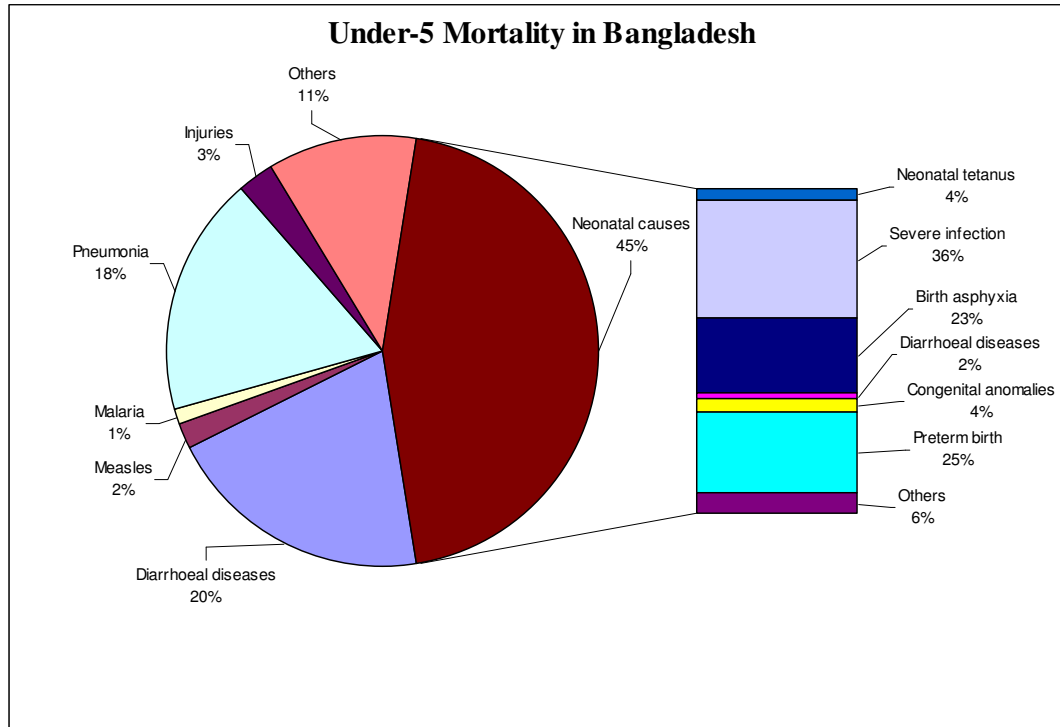


Figure 5: Causes of Mortality in Children Under-five in Bangladesh (WHO 2006b)

2.3 Pakistan: An Overview

With an area of 307,374 square miles, Pakistan is divided into four provinces and a federally administrated tribal area (Mohiuddin 2006). It shares borders with four countries- Iran, Afghanistan, China, and India- and has a 650 miles long coastal belt on the south (Mohiuddin 2006). Cultural, linguistic, and geographical diversity define the people's identity in different regions and vary significantly between provinces and within provinces. In terms of population, Punjab is the largest province (almost 60%), followed by Sindh (22%) and the North-West Frontier Province (NWFP) (13%), and the smallest being Balochistan with merely 5% population, although the largest in terms of area (Malik 2005). Ethno-lingual identities such as Balochi, Punjabi, Sindhi, and Pushtun exist in each province; however, there are further lingual variations within each province. About 12 million Muslim refugees who migrated from India to Pakistan during the 1947 partition speak Urdu, which is also the national language of Pakistan (Malik 2005).

English, however, is the official language and is used in official business, government, academia, and so on. Additionally, the country is home to millions of refugee population, mainly from Afghanistan, that further diversifies the social fabric of the country (Mohiuddin 2006). In terms of religious composition, Pakistan is overwhelmingly a Muslim nation with a small religious diversity: 97% Muslims (77% being Sunnis and 20 percent Shiites), Hindus and Christians about 1.6 percent each, and a small population of Sikhs, Parsis, Bahais, and Buddhists (Mohiuddin 2006).

Pakistan is a land of contrasts with a huge variety of climatic zones and topography: “towering mountain ranges, jagged and snowcapped peaks, vast glaciers, gushing rivers, dry plateaus, fertile plains, lush valleys, arid deserts, an hundreds of miles of almost uninhabited sandy beaches (Mohiuddin 2006).” This ecological and cultural diversity is reflected in varying levels of social development in the country as well as urban-rural divide in each province. The overall urban population of the country is about 33%, but there are huge variations between the provinces- merely 17% in NWFP and almost 50% in Sindh, which is mainly attributable to the urban population of Karachi accounting for 30% of the Sindh’s population and approximately 7% of the total population of the country (Mohiuddin 2006).

2.4 Bangladesh: An Overview

Bangladesh is the most densely populated country in the world, excluding city states such as Hong Kong and Singapore, with a population of over 150 million and a population density of approximately 2,500 persons per square mile (NIPORT 2009). Located in the northeastern part of South Asia, Bangladesh is almost entirely surrounded by India with a short southeastern border with Myanmar and southern coastline on the Bay of Bengal (NIPORT 2009). The country is divided into six administrative divisions, 64 districts, and 496 upazilas or subdistricts (BBS 2001). Almost 90 percent of the population is Muslim, 9 percent Hindus, and remaining 1 percent belonging to other

faiths (NIPORT 2009). The national language of Bangladesh is Bangla, spoken and understood by the entire population (NIPORT 2009).

The climate of Bangladesh is dominated by seasonal monsoons. The landscape is characterized as low and flat mainly consisting alluvial soil (Baxter 1998). The most significant landscape feature is a network of numerous small and large rivers; the major ones include the Ganges-Padma, Brahmaputra-Jamuna, and Megna rivers (NIPORT 2009). Although the fertile delta is of significance importance for the socioeconomic life of the people, it is also ecologically vulnerable subject to frequent episodes of natural disasters, such as floods, cyclones, tidal bores, and drought (NIPORT 2009).

2.5 Pakistan's Health Profile

The Poverty Reduction Strategy Paper (PRSP)- the most thorough government document documenting the social indicators of Pakistan- characterizes the country as having “a high population growth rate, high incidence of low birth-weight babies, and maternal mortality (Pakistan 2003).” Communicable and infectious diseases such as malaria and tuberculosis are recognized as the major contributors to the burden of disease (BOD) in the country. Furthermore, the PRSP suggests that 60% of BOD is associated with poverty-related health problems such as communicable diseases, childhood illnesses, reproductive health problems, and malnutrition (Pakistan 2003).

Government expenditure on health is meager- 0.60 percent of the GDP (one percent of the central government expenditure), which is lowest in the South Asia (Table 3). On the contrary, the defense expenditure of Pakistan surpasses the entire region with 18 percent of central government expenditure allocated in 1992 through 2001 (Bhutta Z. A. 2004). The total health expenditure (THE) in Pakistan is estimated as \$18 per capita with the government health expenditure (GHE) contribution of US \$ 4 per capita and remaining associated with out of pocket expenditure (WHO 2002a). The World Health

Organization (WHO) recommends the figure of US \$ 34 per capita for a package of essential health services (WHO 2002b).

Table 3: Health and Related Expenditure for South Asia (Bhutta Z. A. 2004)

Country	Human development index	Gross national income per capita (\$)	Per capita government expenditure on health in 2001 (\$)	% of central government expenditure (1992-2001) allocation			Overseas development assistance in 2001 (\$m)
				Health	Education	Defense	
Bangladesh	139	360	5	5	11	10	1024
Bhutan	140	590	8	10	15		59
India	127	480	4	2	3	16	1705
Maldives	86	2090	82	10	18	14	25
Nepal	143	230	3	5	15	5	388
Pakistan	144	410	4	1	1	18	1938
Sri Lanka	99	840	15	6	10	18	330

Furthermore, equity in health service distribution has remained a huge challenge and is reflected in the health indicators that are significantly worse in the lowest income quintile and in rural areas of the country (S. Siddiqi 2004). Under-five mortality varies between 121 (lowest quintile) to 60 deaths per 1,000 live births (highest quintile) (NIPS 2008).

2.6 Bangladesh's Health Profile

The Poverty Reduction strategy Paper for Bangladesh delineates the major factors contributing to health problems prevalent in the country as “Factors affecting health, particularly of the poor, are malnutrition, production and availability of grains, level of nutrition knowledge, level of illiteracy and ignorance, consumption patterns, distribution of income and food, level of employment, unsafe drinking water and poor sanitation facilities, non-availability of health services, environmental pollution and degradation, and lack of sufficient access to an efficient public health care delivery system (Bangladesh 2005).” The three main factors contributing to under-five child mortality are

identified as acute respiratory infections, prenatal causes and diarrhea. Neonatal mortality accounts for more than half of U5M of which over 50% occur in the first week of birth.

Although, the country has made significant progress in lowering the rates of infant and under-five mortality, the challenge to meet the MDG4 still remains. Over 43 percent of children under the age of five are stunted, 13 percent wasted, and 48 percent remain underweight. Additionally, 50 percent are born underweight, i.e., below 2.5 kilograms or 5.5 pounds. Poor health of children is closely linked with precarious social status of their mothers (UNICEF 2008). Preferential food allocation to male members of the household exacerbates malnutrition among women. On average, female nutritional intake is 88% percent of that of males, and the consequence of this inequality emerges as ill-health of women, unsafe pregnancy, and low-birth weight babies (ILO-ARTEP 1993).

To address the socioeconomic challenges associated with health issues, the government has developed several Safety Net Programs (SNPs) in the country. For instance, the Vulnerable Group Development (VGD) program is targeted to provide food and development services to destitute mothers in rural areas (Bangladesh 2005). And yet, the financial resources, public and private combined, are insufficient to meet the health challenges of the country. Bangladesh allocates about 3.2 percent of GDP to Health, Nutrition, and Population (HNP) sector. Additionally, per capita expenditure on health is only about US \$13/year of which public spending accounts for only US \$4-\$5/year and the rest is financed through out-of-pocket spending (Bangladesh 2005). The major brunt of this financial burden, however, falls on the poorest segments of the society with highest child mortality prevalent in urban slums, coastal belt regions, and other ecologically vulnerable areas within the country (Bangladesh 2005). The national health policy of Bangladesh recognizes this challenge and emphasizes the resource allocation priorities to address these challenges.

CHAPTER 3

LITERATURE REVIEW

This chapter begins with a historical perspective on public health to develop an understanding of the evolution of public health globally. Various strategies adopted in different parts of the world which contributed to improved health indicators, mainly in the global north, are discussed. The later part of the chapter focuses on health and child mortality in the local context of Pakistan and Bangladesh.

3.1 Public Health: A Historical Perspective

The notion of improvement in the area of public health emerged during the enlightenment era in France (Rosen 1993; Semba 2008). Enlightenment philosophers Denis Diderot and Jean le Rond d'Alembert edited monumental encyclopedia, *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers*, between 1751 and 1772 with references to science and art, which included some aspects of public health such as the life expectancy, infant health, and population growth (Semba 2008). Johann Peter Frank (1745-1821), a German physician, introduced a social medicine approach, i.e., the government could use medical knowledge to improve public health (Semba 2008). Frank's recommendation consisted of broad sanitary, economic, and social reforms to address the prevalent problems of public health. In addition to nutrition and environmental factors, he emphasized the importance of breastfeeding of infants.

With a strong support of evidences, Rosen (1993) argues that modern public health in England began as a response to the evils of industrialization. With the enclosure of common lands, a huge rural population became destitute, causing a mass exodus to the cities where the new industries were desperate for the labor. This newly urbanized population worked in hazardous environments and were forced to live in compact

housing with inadequate ventilation, light, or sewerage (Rosen 1993). The spread of cholera and other epidemic diseases was a result of the poor living conditions of the new working class in England. Edwin Chadwick, a public health reformer, described the sanitary problems of England in the report 'the Sanitary Conditions of the Labouring Population of Great Britain' in 1842, which demonstrated that 'disease stemmed from filthy environmental conditions, polluted water supplies, and the decaying garbage and wastes clogging the streets' (Rosen 1993) and that high mortality as a result of poor sanitary conditions were among the poorest segments of the society (Semba 2008). This dilapidating situation of public health provided impetus to health reform in England and other parts of industrialized Europe.

The last two centuries have witnessed a general improvement in the health of people worldwide, and it is mostly attributed to changes in nutrition, hygiene, and public health. By the end of the 20th century most of the morbidity and mortality associated with diseases such as malaria, cholera, measles, tuberculosis as well as health problems associated with nutritional deficiencies were eradicated from industrialized countries; however, the majority of these health problems and associated morbidity and mortality still remains in the developing world (Semba 2008).

In *The Modern Rise of Population*, Thomas McKeown demonstrates how sharp decline in infection-related deaths occurred before the introduction of modern medicine (WHO 1992). In Sweden, the decline in perinatal mortality by the end of 19th century was mainly attributable to service of midwives who were trained to keep newborns warm, give neonatal resuscitation with tactile stimulus, provide care for the umbilicus, and promote breast-feeding (Lawn JE 2005). Similarly, neonatal mortality in England declined threefold from 1940 to 1975 prior to the introduction of expensive neonatal intensive care (Ronsmans C 1998). A more recent comparable evidence is observed in Bangladesh where the major improvements in neonatal and perinatal mortality were

achieved without relying on technological innovations of expensive healthcare in Bangladesh (Ronsmans C 2008).

A sharp decline in infant mortality was achieved in the United States in the late 19th and early 20th centuries, and the majority of that decline was associated with the control of infectious diseases (Miller 2005). Three major determinants are linked to these improvements in child and overall mortality: 1) economic advances and improvement in nutrition, 2) behavior change due to health and hygiene campaigns, 3) large-scale public health and infrastructure innovations such as water treatment technologies, sanitation, refuse management, milk pasteurization, and meat inspection (Crimmins-Gardner 1978). Some recent studies have suggested that water treatment technologies, mainly filtration and chlorination, were associated with nearly 50% of total mortality decline and two thirds of child mortality decrease in major US cities (Miller 2005).

A general trajectory that was adopted to improve health outcomes by the majority of the developed countries was to achieve the economic growth first and then invest in public health; however, some middle- and low-income countries were also successful in improving the life expectancy and other health indicators by prioritizing the social development indicators and employing public programs to tackle these challenges. Riley (2008) in his study of twelve such low-income countries reflects on this paradox and analyzes the policies and programs that helped these countries overcome the economic challenges in dealing with health issues. For instance, health transition in Sri Lanka began in 1920s under British control and the progress continued even after the independence in 1948. Major policies that were considered effective in achieving life expectancy and child mortality goals included public programs that provided free healthcare through health units especially for maternal and child care. Other welfare initiatives included free meals in schools and nutritional supplements, food subsidies, and health education programs incorporated in school curricula.

3.2 Pakistan's Health and Child Mortality Outcomes

A number of researchers have analyzed the poor performance of Pakistan in achieving health indicators. For instance, Bhutta (2004), in his in-depth analysis of maternal and child health in south Asia, concludes that the limited investment on health research and a lack of coordination between the researchers and policymakers and planners are the main reasons for the poor performance. Additionally, structural adjustment procedure (SAP) that imposes conditionalities on the countries to cut down the social development expenditures is another major cause of poor health indicators (Bhutta 2000). A shift from basic industrial production to agriculture, mainly cash crop farming, is another component encouraged by SAP. The impact of this shift in Pakistan is evident in the field of pharmaceuticals and biotechnology; a switch from the state of self-sufficiency in EPI vaccines in 1980s to now entire dependence on external aid and subsidies even for the basic oral polio vaccines (Bhutta 2001).

In Pakistan, policy making process has always remained bureaucratic and political without the inclusion of all major stakeholders in the process (S. Siddiqi 2004). As a result, health and other sectors have failed to design policies and programs that sufficiently meet the needs of target population. Federal and provincial health departments, donors, and international organizations remain the key actors in the policy formulation in the health sector (S. Siddiqi 2004). However, the other key stakeholders such as communities, NGOs, academia, and ministry of women development that are either greatly influenced by the health policies or have a tremendous potential to impact these policies remain completely excluded from this process (S. Siddiqi 2004).

Additionally, numerous studies and surveys done in Pakistan suggest that poor health indicators may be due to the health policies and programs that do not encompass the wide ranging economic, social, and environmental aspects that may be responsible for such inadequate outcomes. In an empirical study, Jehan et al. (2009) recruited over a thousand expectant mothers in an urban area of Pakistan and monitored their pregnancy.

They found that in spite of constant health monitoring of mothers and proper health services provided at the time of delivery and to the newborns during the first 28 days the neonatal mortality was similar to the average neonatal mortality of Pakistan (Jehan Imtiaz 2009). The results, however inconclusive, point to the fact that non-health care elements such as nutritional, environmental, and other socioeconomic factors may be responsible for preventable causes of neonatal and child mortality.

Numerous studies have established a strong link between neonatal mortality and maternal health. Low birth weight, which is considered as a causal factor in 60 to 80 percent of total neonatal deaths globally, is correlated with maternal malnutrition and general health status (UNICEF 2008). Additionally, stunting caused by under-nutrition in girls leads not only to adverse consequences in later life, but it also increases the likelihood of difficult pregnancy and low birth weight babies, and hence an increased risk of infant mortality (UNICEF 2008). And yet, policy documents for Pakistan address merely reproductive health of women and fail to incorporate other major issues around women's lives such as early-age marriage, mental illness, and sexual abuse that may be responsible for adverse health outcomes affecting their pregnancy and health of babies (Narjis Rizvi 2008). A life cycle approach taking into account multiple factors around women and children's lives is critical to address the preventable causes of deaths in children (Narjis Rizvi 2008).

3.3 Health and Child Mortality in Local Context

Pakistan and Bangladesh are signatories to the U.N. Millennium Development Goals established in 1990 (see Appendix A for a description of MDGs). Although the MDG4 is the only goal that explicitly addresses child mortality, most of the goals addressing socioeconomic development are linked to the children's health outcome (UNICEF 2008). For instance, there is hardly any disagreement about undernutrition

being the underlying cause of a significant proportion of childhood deaths in developing countries (Black R. 2003).

Rehfuess (2006) studies the use of solid fuels and its implications for MDG4 and MDG5 in developing countries and concludes with the support of consistent evidence that the widely prevalent exposure to indoor air pollution from the use of solid fuels significantly increases the risk of pneumonia and other lower respiratory infections among children under 5 years of age. This correlation is reflected in the health statistics and solid fuel use in Pakistan: More than 67% of the population, mostly rural (90%), uses solid fuel for cooking, and over 20% of under-five deaths are associated with pneumonia (NIPS 2008). Bangladesh's health statistics are similar with over 18% under-five deaths caused by pneumonia, and with a much higher solid fuel use- over 90% overall and more than 99% in rural areas.

Addressing the growing health service needs of slum dwellers in urban areas is another challenge for the two countries where the vulnerability to childhood health problems is much worse than the average of the country. In Karachi, unsafe water kills at least 20,000 children each year, and diarrhea is the leading cause of child mortality (IRIN 2009). Dhaka is home to over 3 million slum dwellers living in extreme hazardous environmental conditions. Diarrhea, dysentery, and tuberculosis is a commonplace among the residents, mostly children (Guardian 2009). According to an estimate, by 2025, future population growth of up to 70 million in Bangladesh will be mostly living in urban slums (NIPORT 2009).

Furthermore, the issue of affordability in health service is an immense challenge that needs to be tackled in health policy making. In Pakistan where over 80% medical health expense is out of pocket and 22% of population is living below poverty line (Pakistan 2003), the public health service fails to reach those who are unable to afford private alternatives. Additionally, progress measuring national averages is often misleading and does not reflect the improvement in the conditions of the poor segment of

the society (Claeson 2004). To tackle the challenges of health care affordability, the Government of Bangladesh is providing support to Alternative Medical Care (AMC) through quality control and proper training of providers (Bangladesh 2005).

International development partners play a major role in guiding health policies in both Pakistan and Bangladesh, often because of the lack of capacity and resources of national governments. As Bhutta (2000) puts it:

“When poverty is ubiquitous and increasing, most new activities and programmes in the health sector in developing countries become dependent on the global initiatives of international agencies such as the World Health Organization, Unicef, and private foundations. (Bhutta 2000)”

A major drawback of the homogenous policies recommended by international agencies is that the local context completely gets lost (Bhutta 2000). Due to this reason, a number of global public health initiatives such as malaria eradication and the safe motherhood initiative have failed to produce fruitful results (Deborah Maine 1999). The widely used ‘result-based management’ approach leads to focus on the policy tools that are designed to address the outcomes of the problems rather than tackling the root causes of the issues. For instance, the widely used malaria control strategy is to distribute bednets rather than focusing on the breeding grounds of mosquitoes. Additionally, establishment of numerical health targets based on arbitrary classification of goals by sector needs lead to a donor attitude picking issues of their interest and pursuing isolated results (Franklin 2008).

The above discussion underscores the significance of local context in child mortality outcomes and provides a basis for my analysis in which I aim to evaluate the adequacy of problem formulation in the policy documents from Pakistan and Bangladesh.

Some of the factors highlighted in the literature as well as in the national surveys of Pakistan and Bangladesh include undernutrition as the major problem in children reflected in the underweight status of children in the two countries. Undernutrition in

mothers also leads to adverse health consequences in newborns, such as low birthweight, vulnerability to infections, and other health issues. This alludes to a much larger socioeconomic problem in the countries where poverty is affecting huge numbers of population (Pakistan 2003; Bangladesh 2005).

Environmental hazards and its impacts on children are also identified in the forms of indoor air pollution from burning solid fuel in the majority of households in the two countries and inaccessibility to clean water, sanitation, and hygiene in urban slums and rural areas of the two countries. Limited public health provision and affordability to healthcare systems are also identified as the major problems preset in both countries. Furthermore, homogenous policies recommended by international development partners have often proven to be ineffective due to missing local context.

CHAPTER 4

METHODOLOGY

The qualitative methodology adopted in this research constitutes review of the policy documents for the two countries and literature available pertaining to child mortality issues in the two countries and in developing countries in general. The problem formulation analysis conducted for this research is based on the boundary analysis approach used by Dunn (2007), and it comprises coding of the problem determinants for child mortality in each document reviewed. The coded problem determinants are then categorized based on what are viewed in the literature as the main factors associated with child mortality.

I have identified the following six categories as the components of adequate problem formulation: 1) health care, 2) nutrition, 3) environmental factors, 4) education and awareness, 5) structural factors, and 6) social and other elements. For instance, nutrition encompasses elements such as protein deficiency, micronutrient deficiency, anemia, flour fortification, and so on. Appendix B includes the coded child mortality factors under each category.

Boundary analysis is a strategy to analyze the problem formulation in the policy process. ‘Boundary analysis, like other policy-analytic procedures, yields results that are plausible and not certain (Dunn 2007).’ The main role of the boundary analysis in problem structuring phase of the policy process is to reduce the likelihood of type III errors- that is, solving the wrong problem (Dunn 2007). In the absence of boundary analysis, the actors involved in the policy formulation process would have no way to know whether the problem formulation is relatively complete (Dunn 2007). Three steps suggested by Dunn (2007) are intended to ensure the relative completeness of this process.

1. Saturation sampling: Using saturation or snowball technique, a sample of stakeholders is collected.
2. Elicitation of problem representations: Alternative problem representations are obtained from the selected stakeholders. Problem representations may be described as the “ideas, basic paradigms, dominant metaphors, standard operating procedures, or whatever else we choose to call the systems of interpretation by which we attach meaning to events (Heclo 1976).” The problem representation may be obtained face-to-face, over the phone, or documents requested from the stakeholder (Dunn 2007).
3. Boundary estimation: The problem representations are continued to be obtained from the selected stakeholders until we exhaust the problem formulation and stop receiving the new representations of the problem.

The three-step process of boundary analysis described above provides a guideline for the analysis that I have conducted. Due to limited resources and a lack of comprehensive data, I have adopted the concept of boundary analysis rather than following the exact three-step process.

This analysis relies on the review of the documents produced by multiple actors involved in the health policies in the two countries as well as those that have a potential to play significant role in the. The two sets of policy documents that I have used in the analyses include two national and two international policy documents from each country. The rationale for the selection of these national and international policy documents is the active involvement of these actors in the policy process of the two countries. National Health Policy documents as well as Poverty Reduction Strategy Papers are the two main documents produced within the countries that address the health policies of the countries. Additionally, the international development partners, including the World Bank and the WHO, are prominent actors in directing health policies in Pakistan and Bangladesh (S.

Siddiqi 2004; Bangladesh 2005), and thus the documents produced by these stakeholders contain the policy direction in these countries.

Using the six problem formulation categories, as indicated above, I coded these policy documents, identifying the terms used in the documents that relate to these six categories. Using this analysis, I attempt to identify the dissimilarities in problem formulation in the two countries which may have been responsible for differing outcomes. This analysis was done to test the Hypothesis #1.

Additionally, I have compared the problem structuring of policy documents of each country with the available literature on child mortality. Using the same coding methodology, as used for the policy documents, I coded 33 research papers which were focused on the issues related child mortality in Pakistan, Bangladesh, and in developing countries in general. The intent of conducting this analysis is to explore whether the policy actors in Pakistan utilize academic research in the area of child mortality. This second analysis was conducted to test the Hypothesis #2.

The following sections include a detailed description of data and documents used in the analysis, analysis strategy, and the components of the research model including the outcome and explanatory variables.

4.1 Data Collection

The research methodology for this thesis research utilizes existing available data in the document form. A summary of the data used for the analyses is shown in Table 4. The national health policy documents for Pakistan and Bangladesh were produced by the federal governments, and are updated every few years. Poverty reductions strategy papers were prepared by the governments in low income countries with the assistance of external development partners including the IMF and the World Bank. “A PRSP describes the macroeconomic, structural and social policies and programs that a country will pursue over several years to promote broad-based growth and reduce poverty, as well

as external financing needs and the associated sources of financing (IMF 2008).” The country assistance strategy by the World Bank and the country strategy by the WHO provide the guideline for policy direction in the development process.

The research papers used in the analysis were obtained using ‘web of science’ database. I conducted a keyword search using single terms and a combination of two or more. I used the following keywords: child mortality, infant mortality, neonatal mortality, developing countries, Pakistan, Bangladesh, health, and public health. I then sorted the retrieved articles and retained those with relevance with the research subject.

Table 4: Data Summary

Documents	Publishing Year	
	Pakistan	Bangladesh
Policy Documents		
National Health Policy	2009-Draft	2008-Final Draft
Pakistan, Poverty Reduction Strategy Paper	2004	2005
Country Assistance Strategy (World Bank)	2006	2006
WHO Country Strategy	2006	2007
Research Papers		
33 Research Papers		

4.2 Data Analysis

The data analysis process entails documenting and developing qualitative data matrices, inspection, modification, and analysis (Singleton 2005). The qualitative data matrices are developed by extracting factors, or determinants documented in the policy documents and literature reviewed for the analyses. Four policy documents for each country and 33 published papers were reviewed. The data matrices are provided in

Appendix B with details of problem formulations components under each of the six categories. A detailed description of the results along with visual representation is provided in the next chapter ‘Results and Discussion’.

The graphs included in the results section show the number of problem representations in each category and do not take into account the frequency of the factors in the documents. For instance, micronutrient deficiency is coded once under nutrition category, if appeared in any document, even if it appeared more than once in the same document. Similar to boundary analysis approach, the purpose was to code all new ideas in problem representation rather than documenting the frequency of the terms. After coding all four policy documents for each country and generating four problem formulation matrices, the four matrices were merged into a single matrix for each country. The results with a comparison of Pakistan and Bangladesh are presented in the following chapter in the graphical form. I repeated the same procedure for the second analysis in which I coded the research papers under the six categories identified above and compared the results with the coded matrices of Pakistan and Bangladesh.

4.3 Research Model

The research model consists of ‘child mortality’ as the outcome variable and ‘adequate problem formulation’ as the explanatory variable. The explanatory variable is defined by six factors: 1) health service, 2) nutrition, 3) environmental factors, 4) education/awareness, 5) structural factors, and 6) social and others. A brief description of the six factors constituting the explanatory variable is provided below in the subsequent sections.

Outcome variable = Child Mortality (CM)

Explanatory variable = Problem formulation

CM = f (adequate problem formulation)

CM = f (health service + nutrition + environmental factors + education/awareness + structural factors + social and other factors)

4.3.1 Construction of Adequacy Measure

The outcome variable in this research is the health outcome or more specifically the child mortality rate in Pakistan. The explanatory variable, adequate problem formulation encompasses the factors that are associated with the child mortality outcome. These factors include health service, nutrition, environmental factors, education and awareness, structural factors, and social and others. For instance, Diarrhea related health indicators include lack of access to improved water and sanitation and medical facilities as well as malnutrition, education, and income poverty indicators. These problem formulation categories are based on the extensive review of literature addressing the child mortality in developing countries. A brief description of the each factor is provided in the following sections.

4.3.1.1 Healthcare

Provision of health services is considered as the vital factor in addressing child health in developing countries. Primary health care for children mainly deals with the immunization against the most common causes of child mortality such as polio, tetanus, and measles as well as growth nutritional monitoring of the children. A number of countries, especially those with limited financial resources, historically have been able to achieve child mortality health targets by focusing on basic care. China's "barefoot doctors" with minimal medical training were mobilized mostly in rural areas to provide maternal and child healthcare in 1950s (Riley 2008). Secondary and tertiary healthcare are also deemed important to tackle the health issues outside the scope of primary health providers. Siddiqui (2004) and Maine (1999) emphasize the need of emergency obstetric care to improve the maternal and neonatal mortality indicators.

4.3.1.2 Nutrition

Undernutrition is considered as the underlying cause of a substantial proportion of all child deaths (Black R. 2003). There is a general consensus among public health community on the impacts of maternal and child nutrition on child mortality. Health and survival of newborns heavily depends on the nutritional status of mothers which, if inadequate, leads to still births, low birth-weight babies and other developmental problems in children (UNICEF 2008). In this regard, the United Nations issued a policy brief for policy maker and program planners in developing countries recommending the integration of nutrition considerations into the development process (FAO 2004). However, in most developing countries nutrition is viewed as an independent discipline having its own agenda isolated from public health (FAO 2004). The increasing food prices globally have greatly impacted the nutritional status of the poor in developing countries (Pakistan 2003). As a result, high consumption of cereals but low intake of iron and protein rich foods such as pulses and animal-based proteins prevails, resulting in high level of anemia and other micro-nutrient deficiencies (Bangladesh 2005). Furthermore, undernutrition exposes children to higher risk of other health issues. For instance, children who are mildly underweight are likely to have a two-fold higher risk of death than those who are well-nourished. This risk is amplified to 5- to 8-fold in moderately to severely underweight children (Fishman S 2004).

4.3.1.3 Environmental Factors

Unsafe environment places children at a high risk and vulnerability to health problems. Unsafe drinking water and lack of sanitation contribute an estimated 1.5 million child deaths worldwide, of which 80% are caused by diarrhea (Ezzati M 2002; WHO 2002a). Indoor pollution is another factor contributing to significant health risks and is linked to morbidity and mortality associated with pneumonia (Rehfuess E 2006). Industrial pollution is another environmental factor associated with respiratory problems

generally in urban settings. Additionally, childhood injuries add to another 389,000 child deaths annually in South Asia (Hyder Adnan A. 2008). Among those, Burns, drowning, falls, poisoning, and road-traffic injuries were the main causes.

4.3.1.4 Education and Awareness

Two different aspects of education are believed to be contributing factors toward children's health and mortality. The first one is the lack of applied research exploring the causes of morbidity and mortality in the local context as well as shortage of skilled health workers and public health professionals. Another aspect of education is a general awareness regarding maternal and child health. The demographic and health survey conducted for the two countries illustrates that the mother's education level is strongly linked to the level of health risk in children (NIPS 2008; NIPOORT 2009). It shows that the under-five mortality was the highest (102 per 1,000 live births) in the group of mothers with no education compared to 60 in the group with mothers having college education in Pakistan (NIPS 2008). Other awareness factors related to mother's education are described as impacting the sanitation and hygiene behaviors and mothers and children, effective breastfeeding known as a critical component in developing immunity in infants, birth intervals, and the use of Oral Rehydration Salts (ORS) to treat diarrhea at home. Consanguinity, which is prevalent in many developing countries, was also mentioned in the literature as having the evidential relation with childhood health problems (Saadat 2007) and may be associated with a lack of awareness in general public about the health consequences of marriage between close relatives.

4.3.1.5 Structural Factors

The main focus in the documents reviewed for this analysis, especially the literature addressing the child health and mortality in the two countries and in developing world in general, is the elements associated with the structural problems. A lack of

adequate public health expenditure was the major factor seen as impacting different dimensions of health sector and consequently the child mortality. Furthermore, a lack of access to roads and other infrastructure in rural areas is considered as a huge constraint to accessing health services. Some of the other structural factors mentioned in the policy documents and literature include wide spread corruption, minimal vital registration for cause determination, centralized policy making excluding the major stakeholders, lack of environmental regulations, and so on.

4.3.1.6 Social and Other Factors

Poverty, female empowerment, social inequality, and conflicts and upheavals are some of the factors considered under this category. Some other health determinants include reckless driving, child victims of violence, rapid urbanization and overcrowding, and gender differentials in health care. Poverty is identified as the major factor contributing to the risks associated with malnutrition, lack of education, limited or no access to health services, and poor environmental conditions.

CHAPTER 5

RESULTS AND DISCUSSION

The results are presented in the following sections. As indicated in the ‘Introduction’ section above, two hypotheses were tested.

Hypothesis #1: Pakistan’s outcomes are worse than Bangladesh’s in part because of lack of alignment between the official problem formulation and factors known to be important locally.

A comparison of policy documents for the two countries shows that the problem formulation determinants are much more aligned with the local context in case of Bangladesh than of Pakistan. For instance, nutritional determinants of child morbidity and mortality are highlighted in the national policy documents for Bangladesh recognizing the poor progress associated with stunting, underweight, and wasting indicators in children. Pakistan’s policy documents, on the other hand, merely focus on that health care service, education/awareness factors, and some nutritional factors that are promoted by international health agencies and development partners. The international policy documents, however, have a strong emphasis on structural determinants of child health which are also missing in the national policy documents. Hypothesis #1 is thus accepted.

Hypothesis #2: Pakistan’s outcomes are also weakened by lack of attention to some factors identified as important in the research literature.

As indicated in the detailed discussions in the following sections, a number of structural factors and some social factors identified in the literature as the contributors to inadequate outcomes in child mortality are omitted from policy documents of Pakistan. Although, Bangladesh is much more thorough in problem formulation compared to Pakistan, several structural and social factors identified in the literature are not included

in the policy documents of Bangladesh. Conclusively, both countries appear to be deficient in incorporating child mortality related research elements in their policy documents. Thus, hypothesis #2 is also accepted.

5.1 Problem Structuring Differentials

5.1.1 A Comparison of Pakistan and Bangladesh

Problem structuring differences between the two countries are conspicuous as seen in Figure 6. Pakistan's focus on health care, education/awareness, and structural factors is prominent. However, the count of nutritional and environmental factors is much greater in Bangladesh's policy documents, and the majority of the factors reflect a clear local context, which is missing in the case of Pakistan.

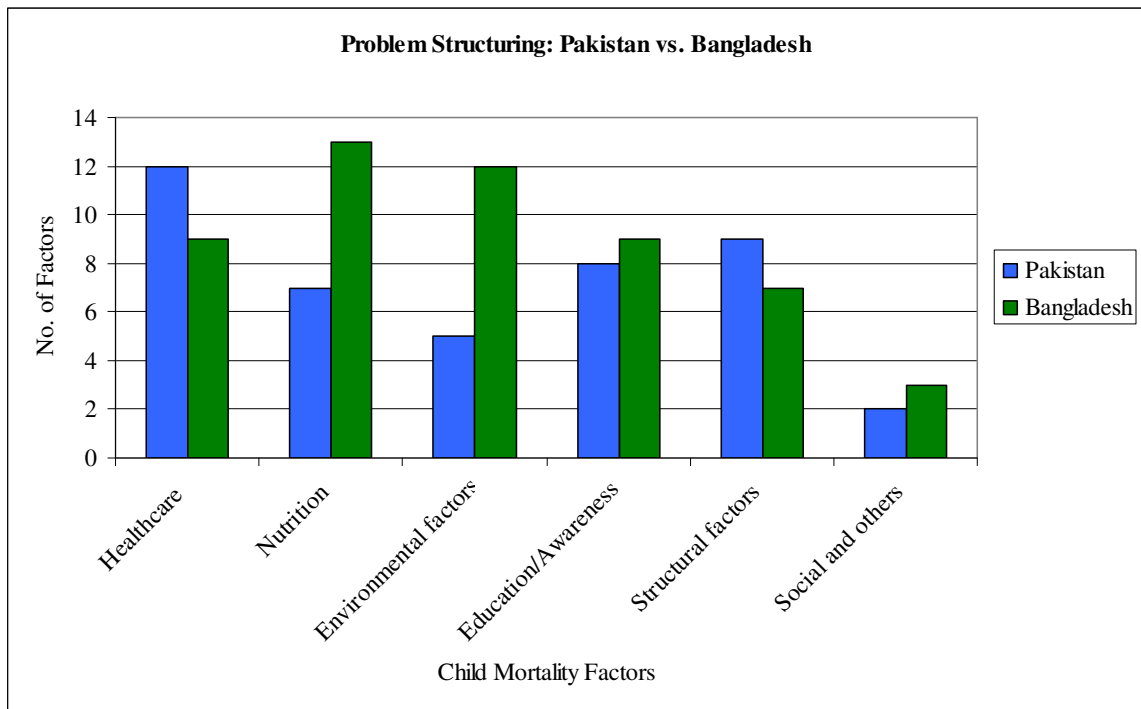


Figure 6: Problem Structuring: Pakistan vs. Bangladesh

Pakistan's health policy document is cursory lacking adequate problem formulation. Both international policy documents as well as the PRSP show a similar level of focus on healthcare. While the PRSP and WHO incorporate the same level of nutrition elements, the CAS has a prominent focus on structural elements of child mortality problem.

All four policy documents of Bangladesh equally emphasize healthcare and environmental factors of child mortality. The PRSP's focus is chiefly on different aspects of nutrition and related health issues in children. The health policy and the WHO document, however, are geared toward addressing the environmental determinants of child health and mortality. The health problems associated with slums, rapid urbanization, and overcrowding are discussed in detail.

5.1.1.1 Healthcare

Healthcare factors remain prominent in most of the policy documents reviewed for the two countries. The level of emphasis on health care is similar in the two countries, and most of the problem formulation factors indicated in the policy documents of the two countries are generic and quite similar. Immunization, neonatal tetanus and other complications, acute respiratory infections, diarrheal diseases, and obstetric care are identified as the health care related factors in the policy documents of the two countries. Pakistani policy documents, however, emphasize the role of 'lady health workers' for primary and secondary care, which entails the local context. Similarly, Bangladesh's policy documents include Integrated Management of Childhood Illnesses (IMCIs).

5.1.1.2 Nutrition

Nutritional factors are prominent in Bangladesh's policy documents, especially in the PRSP (Figure 6). In addition to the global nutrition agenda such as vitamin A, iodine, and other micronutrients, the national document emphasize the inclusion of local

nutritional determinants of health such as protein deficiency and food safety as well as emerging nutritional challenges including fat diets and junk food which is causing a new string of health issues in urban population. Additionally, the policy documents address the vulnerability of the rural population to access food and proper nutrition by a number of public transfer mechanisms such as Food-for-Work, Vulnerable Group Feeding, and Vulnerable Group Development (Bank 2006). More than 80 percent of Bangladesh's poor population lives in the rural areas, and these programs have shown a significant decrease in child malnutrition. Furthermore, this is a judicious policy direction considering the general child health statistics of the country: an estimated 46% of under-five children are underweight in Bangladesh, 16% suffering from moderate to severe wasting, and 36% suffering from moderate to severe stunting (UNICEF 2009a).

Policy documents of Pakistan, however, merely indicate those factors that are generally promoted by the international development partners. Nutritional issues related to malnutrition, micronutrient deficiency, low birthweight, anemia, flour fortification, and so on are briefly mentioned in the policy documents.

5.1.1.3 Environmental factors

Environmental factors contributing to child mortality are more pronounced in the policy documents of Bangladesh in general, but mainly in the national health policy and WHO strategy for Bangladesh. There is a prominent focus on the environmental problems associated with urban slums and their implications for health and survival of the children. Overcrowding, poor housing conditions and environmental sanitation are some of the elements affecting the livelihood of children living in slums (Bangladesh 2008). Other factors are identified as ecological disasters and environmental problems associated with displacement and poor housing conditions. Additionally, the WHO identifies water, sanitation, and hygiene as well as indoor air pollution from burning biomass as major factors affecting children's health in Bangladesh.

Pakistan's policy documents, however, identify briefly only those environmental factors that are part of international policy agenda, such as water, sanitation, indoor/outdoor pollution, and so on.

5.1.1.4 Education/Awareness

Some of the common factors indicated in the policy documents of both countries include women's education, oral rehydration therapy, breastfeeding, and family planning. Pakistani documents elaborate further on the education/awareness elements and indicate additional factors such as zinc treatment for diarrhea, safe motherhood, and training of skilled personnel. Bangladesh emphasizes health education through mass media and school curricula and dissemination of health awareness at religious centers where large groups of people congregate. Additionally, NGO's are also playing a major role in providing education and awareness regarding health and hygiene in Bangladesh.

5.1.1.5 Structural factors

The World Bank policy formulation (CAS) shows a strong focus on structural elements in the case of Pakistan. This result is predictable considering the poor state of health sector in Pakistan, a lack of human resources and management capacity, and insufficient public expenditure on health (Appendix B). Some of those structural factors are included in WHO document as well; however, the national health policy does not touch on these factors and the PRSP only briefly indicates some of the structural factors. Bangladesh, on the other hand, has a moderate discussion geared toward structural determinants of child mortality across all the documents.

5.1.1.6 Social and others

Limited factors are coded under this category for both countries. There is a general indication of poverty as a problem leading to inaccessibility to health care in both countries. Gender differentials are indicated in Pakistani documents; however, evidence

is lacking to support this claim. The Demographic and Health Survey of Pakistan does not report any significant gender differentials in health outcomes of children. Bangladeshi documents elaborate on urbanization resulting in changing family structure which impacts the health and wellbeing of the children. The National Health Policy document of Bangladesh also indicates child victims of violence and how to provide health support to these children.

5.1.2 A Comparison of Pakistan and Bangladesh with Literature Review

Figure 7 presents the results showing a comparison of problem formulation in Pakistani and Bangladeshi policy documents with the literature available focused on child mortality. In general, the literature review encompasses a broad range of factors associated with child mortality under all the categories, except nutrition which is sparsely mentioned in the literature. Bangladesh's policy documents incorporate much detailed discussion focused on nutrition with problem representations consistent with the local context. Structural elements are addressed in a great detail in the literature, and are considered as the limiting factors in poor performance of child health related goals. In environmental factors, Pakistani policy documents remain inadequate and include only those environmental problems that have been identified by the international development partners. On the contrary, Bangladesh's policy documents, especially the PRSP, incorporates a wide range of environmental factors associated with child health and mortality with a strong focus on the local context. Factors related to health care and education/awareness are overlapping in all three cases- Pakistan, Bangladesh, and Literature- with the similar level of emphasis. A detailed discussion of comparative problem formulation under each category is provided below, and a description of the problem formulation factors in literature review is provided in Appendix C.

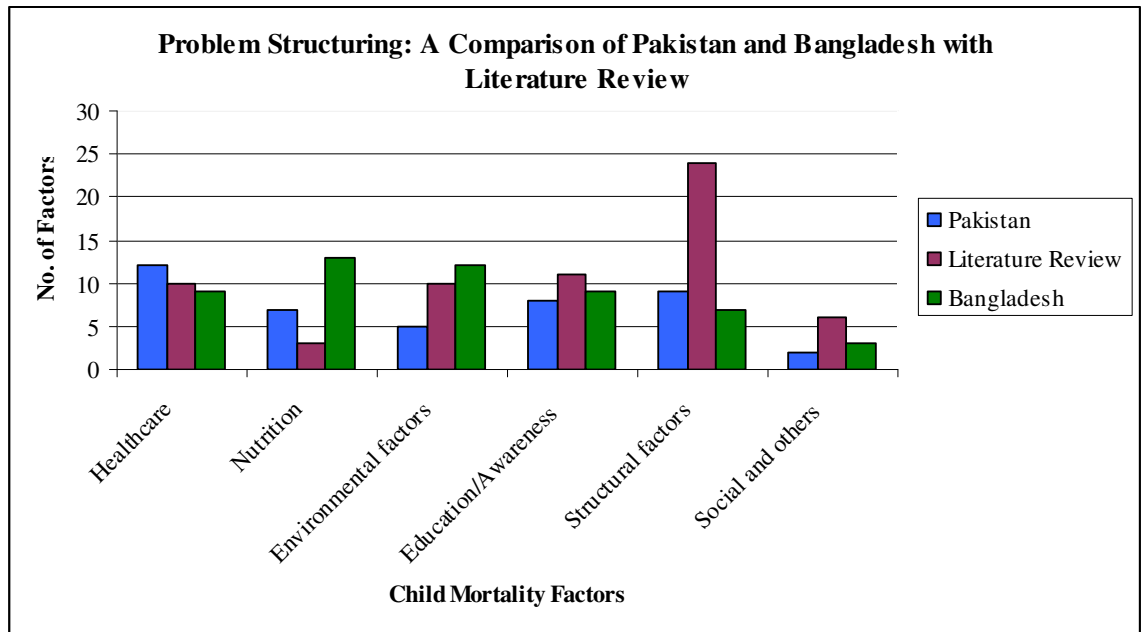


Figure 7: Policy Formulation Differentials between Pakistan and Literature Review

5.1.2.1 Healthcare

Health care and service related factors are common in the three comparative cases- Pakistan, Bangladesh, and literature review (Figure 7). The policy documents of the two countries indicate health care related factors as focus of policy direction. The literature review, however, include the same problem representations associated with healthcare, albeit as the basis for further research. For instance, neonatal mortality is extensively addressed in the policy documents as well as in the literature. The policy documents chiefly focus on the established causes of neonatal mortality, and based on those, devises policies and programs to tackle the challenges. The literature review, on the other hand, explores different dimensions of the problem and focus on those aspects which have not been recognized but have a potential to improve our understanding of the issue. For instance, Jehan et al. (2009) in their prospective population-based cohort study of the risks and causes of neonatal mortality concluded that despite obstetric and neonatal care that was provided to the mothers recruited for the study and their newborns, the rate of neonatal mortality was not lessened, and it was similar to the country average. This

finding raises questions for the health care system and prevalent policy directions in the countries.

5.1.2.2 Nutrition

The research focused on nutrition and its correlation with child health and mortality is scarce as seen in Figure 7. Pakistan's policy documents indicate various factors related to nutrition and child health, but most of those elements are generic and acquired from the international policy agenda, such as malnutrition, micronutrient deficiency, stunting, anemia, etc. A number of other nutrition related factors that are included in Bangladesh's documents may be relevant to Pakistan's local context, such as food accessibility for urban poor and rural population and the impact of rising food prices on the vulnerable segments of the society. Furthermore, Bangladesh's PRSP focuses on food safety issues that are causing illnesses in children living in urban slums. Additionally, protein deficiency in vulnerable population is addressed which mainly arises from inflation and soaring prices of meat and poultry in the country. All these factors indicated in the policy documents of Bangladesh provide a basis for a policy direction focused on the specific issues associated with health and mortality and thus facilitates in designing policy tools to tackle these challenges. The missing contextual treatment of nutritional factors in policy formulation of Pakistan may be responsible for the development of ineffective policy tools.

5.1.2.3 Environmental factors

Just as nutritional factors, environmental elements associated with health and wellbeing of children are under-mentioned in the policy documents of Pakistan. Again, environmental factors that are on international policy agenda, such as, water, sanitation, hygiene, and indoor pollution, are indicated in Pakistan's national policy documents. On the contrary, Bangladesh attends to local environmental issues such as arsenic poisoning

from groundwater, environmental hazards in urban slums, domestic and medical waste management, and burden of disease from changing climate and disasters, and so on. The literature on child mortality deals with a number of environmental factors, such as childhood injuries (drowning, burns, falls, and poisoning); water, sanitation, and hygiene; arsenic poisoning; indoor/outdoor pollution; pesticide misuse; and so on.

5.1.2.4 Education/Awareness

Ample treatment of educational and awareness elements is evident in the policy documents of the two countries, comparable to the literature review (Figure 7). There seems to be a significant overlap between the policy documents of Pakistan and Bangladesh in terms of educational factors. However, most of these factors are part of global child health policies; these include maternal education, birth interval, family planning, promotion of breast feeding, oral rehydration salts for the treatment of diarrhea, and so on. Although these elements are recognized and proven to be efficient in reducing child morbidity and mortality, several other unexplored opportunities might be there to help mitigate child health problems. For instance, Bangladesh proposes to incorporate health information in school curricula and promotes health awareness through religious centers and local NGOs. The literature addresses lack of applied research taking into account the local context, which could be helpful to policy makers in understanding the local child health issues and innovative techniques to deal with them. Another child mortality determinant identified in the literature was consanguinity which was correlated with child health risks. A sample of countries including Pakistan and Bangladesh was studied to find the effects of inbreeding on childhood mortality (Saadat 2007). The study found a positive correlation between inbreeding and higher mortality rates in children.

5.1.2.5 Structural factors

As seen in Figure 7, the literature review shows prominent standing in structural factors. Although the level of attention given to structural elements is similar in case of both Pakistan and Bangladesh's policy documents, the nature of problem representation is different and country specific. It is worth noting that structural factors are chiefly mentioned in the international policy documents, the World Bank's Country Assistance Strategy and WHO's Country Strategy, for Pakistan. The major elements discussed in these documents include budget allocation, monitoring and evaluation of programs and policies, lack of infrastructure in rural areas, and so on. The literature addresses a number of factors which may be responsible for inadequate outcomes in health and child mortality. For instance, cost-effective interventions are considered critical, especially in the case of Pakistan where budget allocation for health is insufficient. Additionally, drug availability, vital registration for cause determination, lack of resources and funds due to structural adjustments imposed by the World Bank and IMF are considered crucial in achieving child mortality related goals in developing countries.

5.1.2.6 Social and Others

Under this category, only those factors were coded that did not fall under any of the five categories discussed above. Hence, the coded factors are limited generic in this category. For instance, poverty was mentioned in most of the policy documents as well as the literature, but no specifics were provided under this broad term. One important social factor that was indicated in Pakistan's policy document was gender differentials in health care. Owing to the fact that Pakistan is a socially conservative and patriarchal society, gender discrimination in health and other areas is prevalent and hence paramount in policy formulation related to health.

CHAPTER 6

CONCLUSIONS AND POLICY IMPLICATIONS

Problem structuring aspect of child mortality policy was analyzed in this research, comparing the problem formulation of Pakistan and Bangladesh. These two countries were selected for a comparative analysis based on multiple comparable facts: GDP, population, region (South Asia), and so on. Additionally, the two countries share a common history; Bangladesh got independence from Pakistan in 1971 after remaining a province of Pakistan from 1947 to 1971. Contrasting factors associated with the two countries provided further motivation for this comparative analysis: the GDP of Bangladesh has historically remained lower than that of Pakistan and the infant and child mortality, which remained higher until early 1990s, declined drastically to the level where the rates are significantly lower than Pakistan's mortality rates.

Problem formulation differences analyzed in this research were based on two criteria: 1) whether the local context is missing in case of Pakistan which leads to differing outcomes of child mortality in the two countries and 2) whether a lack of incorporation of research in the area of child mortality may be contributing to diverging outcomes. The results show that problem formulation of child mortality was much more contextual, especially, nutrition and environmental factors, in the case of Bangladesh. Pakistan's policy documents, on the other hand, incorporated a general formulation of the child mortality problem, chiefly adopting international policy agenda.

The second analysis focusing on the academic research show that structural factors are dominant in the research addressing child mortality, and that Pakistan lacks adequate level of structural elements in their problem formulations. Some of the structural factors highlighted in the literature are applicable to the Pakistan's child health

policies, such as, a focus on cost-effective interventions, vital registration for cause determination, a lack of input from local technical experts, and so on.

The national health policy document of Pakistan provides cursory guidelines without incorporating local context. For instance, it provides a brief mention of nutritional factors in the context of children's health. In a country where more than 50% of under-five deaths occur in the neonatal period and a demonstrated correlation exists between the neonatal deaths and mothers' health and nutrition, a much higher level of emphasis is crucial. Bangladesh's policy documents, on the contrary, provide a context-oriented formulation of children's health problems. For instance, the PRSP addresses the malnutrition problem in a great detail with a focus not only on internationally prescribed policy interventions such as vitamin A, but also the factors that are contributing to the ill health and mortality of the children in the country based on the evidence from the national surveys and research. The prevailing problems of a large percentage of children being under-weight, stunted, and wasted in the country are associated with an overall nutrition deficiency including protein and micronutrients. In addition to these problems, the emerging health concerns such as fatty diet and junk food are also addressed in the policy documents of Bangladesh.

Furthermore, Pakistan's policy formulation lacks a specific discussion of environmental issues and their link to child morbidity and mortality. Water, sanitation, air pollution are briefly mentioned in the CAS and PRSP reports. Contrary to that, Environmental factors which are recognized by the epistemic community and identified by the local surveys and research are more pronounced in the policy documents of Bangladesh, with a focus on the local context. For instance, arsenic in groundwater is the major problem affecting children's health in the country and is addressed amply in the policy documents of the country. Additionally, a number of health issues, which are associated with overcrowding in urban areas/slums, climatic disasters (flooding etc),

industrial waste and clinical waste, and indoor air pollution from burning biomass, are discussed in Bangladesh's policy documents.

Conclusively, the international and national policy actors involved in the problem formulation associated with child mortality in Pakistan ought to focus on the local factors and determinants of the problem. Additionally, academic research in the area of child health and mortality can be utilized to enhance the understanding of multiple factors causing health problems and mortality in children and to improve the policy tools to tackle these challenges.

- Policy actors may conduct need assessments using feedback from local doctors and health professionals directly dealing with child health issues
- The demographic and health surveys as well as other investigations and data collection efforts done at country level may provide valuable information on socioeconomic differentials in health outcomes and other regional variations in child health outcomes. This may help the policy makers in designing specific tools to incorporate those variations.
- Another strategy to enhance policy outcomes may be to adopt policies and programs that have been proven to be effective in other developing countries, especially in the same region.
- Intersectoral collaboration is essential in order to formulate policies and programs embodying local context. For instance, waste management issues may only be effectively incorporated in the health related problem formulation by an active engagement with national and local environmental sectors.

6.1 Further Research Recommendations

The analysis presented in this study entails a further need to focus on problem structuring phase of policy process. The results show that Pakistan's problem structuring of child health and mortality is deficient and lacks local context. The results also signify

the potential role of academic research in child health policies in the country. This research, however, relied on the limited policy documents of the two countries as a proxy for stakeholder consultation that may not be reflective of the complete set of problem representation pertaining to child health and mortality in Pakistan and Bangladesh. A complete boundary analysis, as described in the ‘Methodology’ chapter, may be incorporated in further research on this subject. A thorough problem structuring analysis may be achieved by collecting first hand data and adopting a survey and/or interview based research methodology, in addition to document review.

APPENDIX A

MILLENNIUM DEVELOPMENT GOALS AND TARGETS

Millennium Development Goal	Targets
Goal 1: Eradicate extreme poverty and hunger	1A. Halve, between 1990 and 2015, the proportion of people whose income is less than \$1 a day. 1B. Achieve full and productive employment and decent work for all, including women and young people 1C. Halve, between 1990 and 2015, the proportion of people who suffer from hunger
Goal 2: Achieve Universal Primary Education	2A. Halve, between 1990 and 2015, the proportion of children who are out of school 2B. By 2015, all children, boys and girls alike, will be able to complete a full course of primary schooling
Goal 3: Promote Gender Equality and Empower Women	3A. Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015
Goal 4: Reduce Child Mortality	4A. Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate
Goal 5: Improve Maternal Health	5A. Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio 5B. Achieve, by 2015, universal access to reproductive health
Goal 6: Combat HIV/AIDS, Malaria and Other Diseases	6A. Have halted by 2015 and begun to reverse the spread of HIV/AIDS 6B. Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it 6C. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
Goal 7: Ensure Environmental Sustainability	7A. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources 7B. Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss 7C. Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation 7D. By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers
Goal 8: Develop a Global Partnership for Development	8A. Develop further an open, rule-based, predictable, non-discriminatory trading and financial system 8B. Address the special needs of the least developed countries 8C. Address the special needs of landlocked developing countries and small island developing States 8D. Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term

APPENDIX B

PROBLEM STRUCTURING CODING: POLICY DOCUMENTS

Child Mortality Factors	Pakistan	Bangladesh
Healthcare	1. immunization coverage 2. immunization for Hepatitis B in children 3. pre- and post-natal care 4. clean child delivery 5. minimize sepsis, and manage asphyxia and hypothermia at birth 6. Reduce neonatal and perinatal mortality 7. emergency obstetric care 8. communicable and vaccine-preventable disease control 9. acute respiratory infections 10. diarrhoeal diseases control 11. access to Lady Health Workers 12. child delivery by trained providers	1. immunization coverage/EPI coverage 2. tetanus immunization/neonatal tetanus control 3. expansion of antenatal care 4. increase in the ratio of professionally-attended deliveries/child birth safety 4. ARI control 5. Diarrhoea control programs 6. measles catch-up campaign 7. surveillance of all vaccine-preventable diseases 8. Integrated Management of Childhood Illnesses (IMCI) 9. cost-effective vaccines
Nutrition	1. Malnutrition 2. Nutrition supplementation 3. micronutrient deficiencies 4. low birth weight 5. flour fortification 6. stunting 7. anemia	1. Malnutrition 2. food supplies to the vulnerable in rural areas 3. underweight children 4. fat diets/ junk food 5. stunting 6. anaemia 7. vitamin A 8. Iodine deficiency 9. food safety 10. Chronic energy deficiency 11. protein-energy malnutrition 12. low birth weight 13. micronutrient deficiency
Environmental factors	1. clean water 2. sanitation 3. outdoor air pollution in urban areas 4. indoor pollution in rural areas from solid fuels 5. environmental health initiatives	1. overcrowding/poor housing 2. clean water 3. sanitation 4. poor sanitary conditions/hygiene 5. childhood disabilities 6. health problems related to urban slums. 7. disease burden from changing climate/disasters 8. arsenic contamination of groundwater 9. Management of clinical waste 10 solid waste/domestic waste 11. industrial wastewater 12. indoor air pollution from burning biomass
Education/Awareness	1. Maternal education 2. birth interval 3. family planning 4. Oral Rehydration Salts (ORS), 5. promotion of breastfeeding 6. zinc during treatment of diarrhea 7. training of skilled personnel 8. safe motherhood and pregnancy	1. women's education especially in rural areas 2. Oral Rehydration Therapy 3. breastfeeding 4. family planning 5. Health education within MOHFW 6. Health education through mass media 7. Basic health information through school curricula 8. health awareness through religious centers 9. health information through NGOs
Structural factors	1. surveillance, quality control, monitoring and evaluation, and public information 2. Lack of access to power, road, and infrastructure in rural areas 3. low expenditure in health, water, sanitation 4. Management capacity, data, and program evaluation 5. human development 6. development of private sector 7. lack of well-defined roles and responsibilities between different tiers of government 8. capacity building 9. development of intersectoral activities 10. Drug pricing and affordability	1. service delivery through NGOs 2. synergies among the MDGs 3. address district and regional variations (urban slums, the CHT, coastal belt regions and other ecologically vulnerable areas are falling behind) 4. lack of social services and infrastructure in urban areas 5. malnutrition in health-care facilities 6. international professionals/expertise needed 7. institutionalization of the community-based skilled birth attendants (SBA)
Social and others	1. Gender differentials in health care 2. poverty	1. Urbanization and changing family structure 2. child victims of violence 3. poverty

APPENDIX C

PROBLEM STRUCTURING CODING: LITERATURE REVIEW

Child Mortality Factors	Literature Review (Pakistan, Bangladesh, South Asia, and General)
Healthcare	1. emergency obstetric and child care in rural hospitals 2. pneumonia 3. diarrhoea 4. neonatal disorders 5. comorbidity 6. access to lady health workers 7. communicable diseases 8. perinatal causes 9. comorbidity 10. acute respiratory infections
Nutrition	1. nutritional deficiencies 2. micronutrients to mothers and infants 3. complementary feeding promotion
Environmental factors	1. injury in urban squatter and rural setting (burns, drowning, falls, poisoning, road traffic) 2. clean water 3. sanitation 4. hygiene 5. Arsenic poisoning 6. indoor air pollution due to overcrowding and poor housing 7. indoor air pollution from the use of solid fuels 8. industrial pollution 9. led poisoning 10. pesticide misuse
Education/awareness	1. maternal age associated with low birthweight 2. girls' education 3. Midwifery Education 4. birth intervals 5. skilled health professionals 6. lack of research programs and applied research 7. awareness of hygiene and environmental sanitation at grassroots 8. lack of skilled health workers 9. effective breastfeeding 10. consanguinity related child health risks 11. family planning
Structural factors	1. cost-effective interventions 2. public-private sector partnership 3. multi-sectoral approach 4. donor assistance with minimal input from national technical experts 5. human resource needs of the private and NGO sector 6. public sector resource allocation 7. collaboration with private and NGO sector 8. community-based interventions 9. limited funds due to structural adjustments 10. lack of environmental regulations 11. dysfunctional health systems 12. corruption 13. centralised health policy making 14. poor devolution to local governments 15. low public sector spending 16. contracting-in management for basic health service 17. supervision 18. accountability 19. supply distribution 20. drug availability 21. vital registration for cause determination 22. more spending in arms and weapons than on health and education 23. environmental regulations 24. lack of social safety nets
Social and Others	2. consanguinity associated child health issues 3. poverty 4. female empowerment 5. social inequity 6. conflicts and upheaval

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